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Contributions of below–threshold decays to $\mathcal{MSSM}$ Higgs branching ratios: Erratum[1]

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Abstract

In Ref. [1] we calculated all the experimentally relevant branching ratios of the Higgs bosons of the Minimal Supersymmetric Standard Model, paying particular attention to the contributions from below–threshold decays. Unfortunately, an error in one of the subroutines of the `FORTRAN` code we used was affecting the computation of the off–shell partial widths of the decays $A \to Z^{0*}h^*$ and $H^\pm \to W^{\pm *}h^*$. This has now been fixed, and the corrected plots are presented here.

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Corrected results for the $A \to Z^{0*}h^*$ and $H^\pm \to W^{\pm *}h^*$ branching ratios at small $\tan\beta$

The error in the program was affecting the two decay channels $A \to Z^{0*}h^*$ and $H^\pm \to W^{\pm *}h^*$ below the real particle thresholds at $M_{Z^0} + M_h$ and $M_{W^\pm} + M_h$ respectively. The corresponding rates for the on–shell decays were correct. The overall effect was to underestimate the off–shell partial widths (and consequently the branching ratios): this was substantial at small values of $\tan\beta$, but negligible at large values since in this latter case the two channels are heavily suppressed. Figs. 3 and 5 (which replace the corresponding figures in Ref. [1]) show the new results. The comments in the text of Ref. [1] remain unchanged. We note that the corrected rates have phenomenological relevance for the case $H^\pm \to W^{\pm *}h^*$, whereas for $A \to Z^{0*}h^*$ the impact is largely reduced.

Our results agree now with the rates given in Ref. [2], within computational errors and taking into account different choices of the parameters, scales, etc. The `FORTRAN` code used in our analysis is available on request from the authors.

Acknowledgements

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References

[1] S. Moretti and W.J. Stirling, *Phys. Lett.* **B347** (1995) 291.

[2] A. Djouadi, J. Kalinowski and P.M. Zerwas, *preprint* DESY 95–211, IFT–95–14, October 1995.

Figure captions

[3] Branching ratios for the pseudoscalar $\mathcal{MSSM}$ Higgs bosons A as a function of M_A, for $\tan\beta = 1.5$ and 30. Other parameter values are given in the text of Ref. [1].

[5] Branching ratios for the charged $\mathcal{MSSM}$ Higgs bosons $H^\pm$ as a function of $M_{H^\pm}$, for $\tan\beta = 1.5$ and 30. Other parameter values are given in the text of Ref. [1].

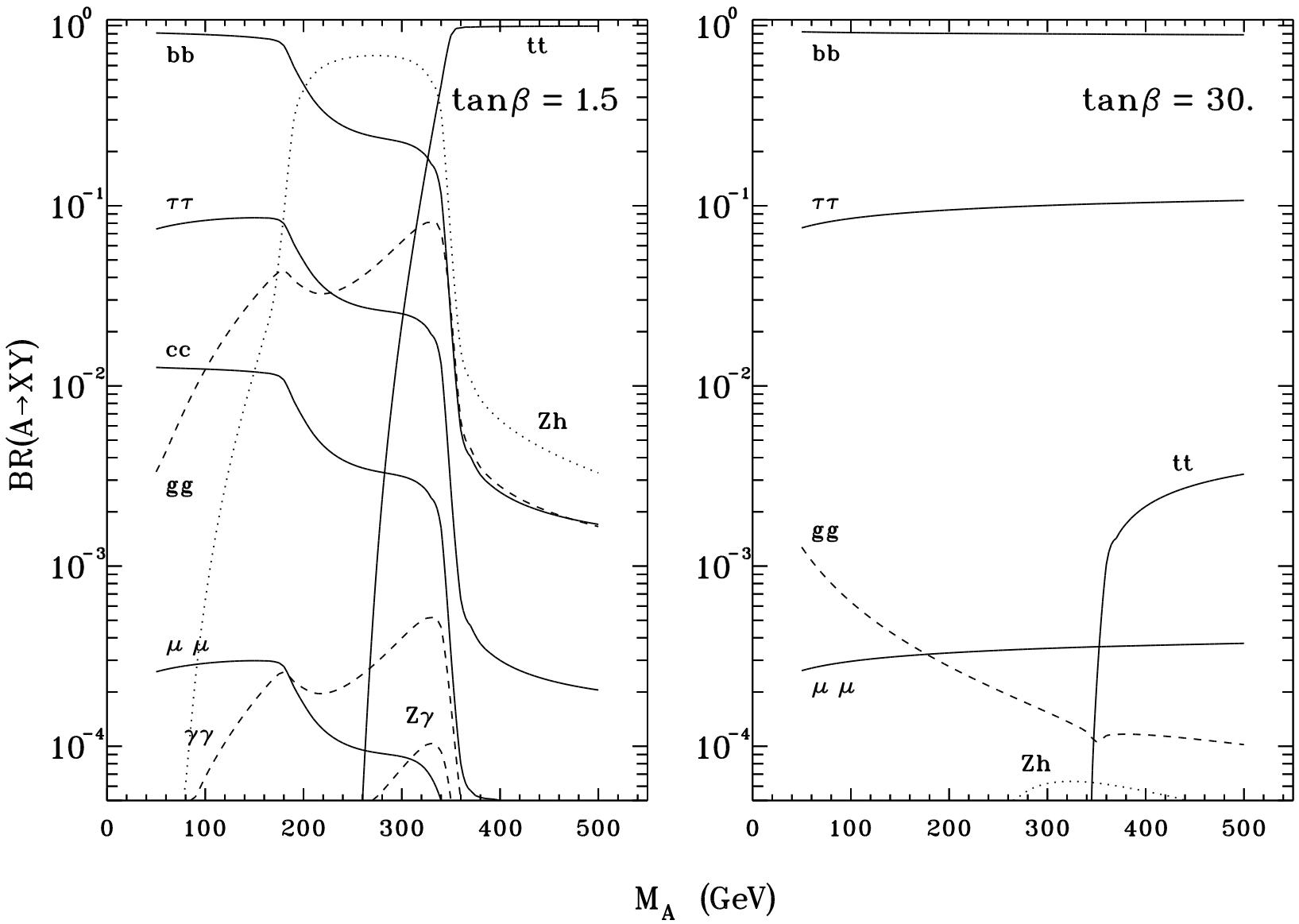
BR(A→XY)
10^0
10^{-1}
10^{-2}
10^{-3}
10^{-4}
bb
tt
$\tan\beta$ = 1.5
$\tau\tau$
cc
gg
Zh
$\mu\,\mu$
$Z\gamma$
$\gamma\gamma$
0
100
200
300
400
500
bb
$\tan\beta$ = 30.
$\tau\tau$
tt
gg
$\mu\,\mu$
Zh
M_A (GeV)

Fig. 3

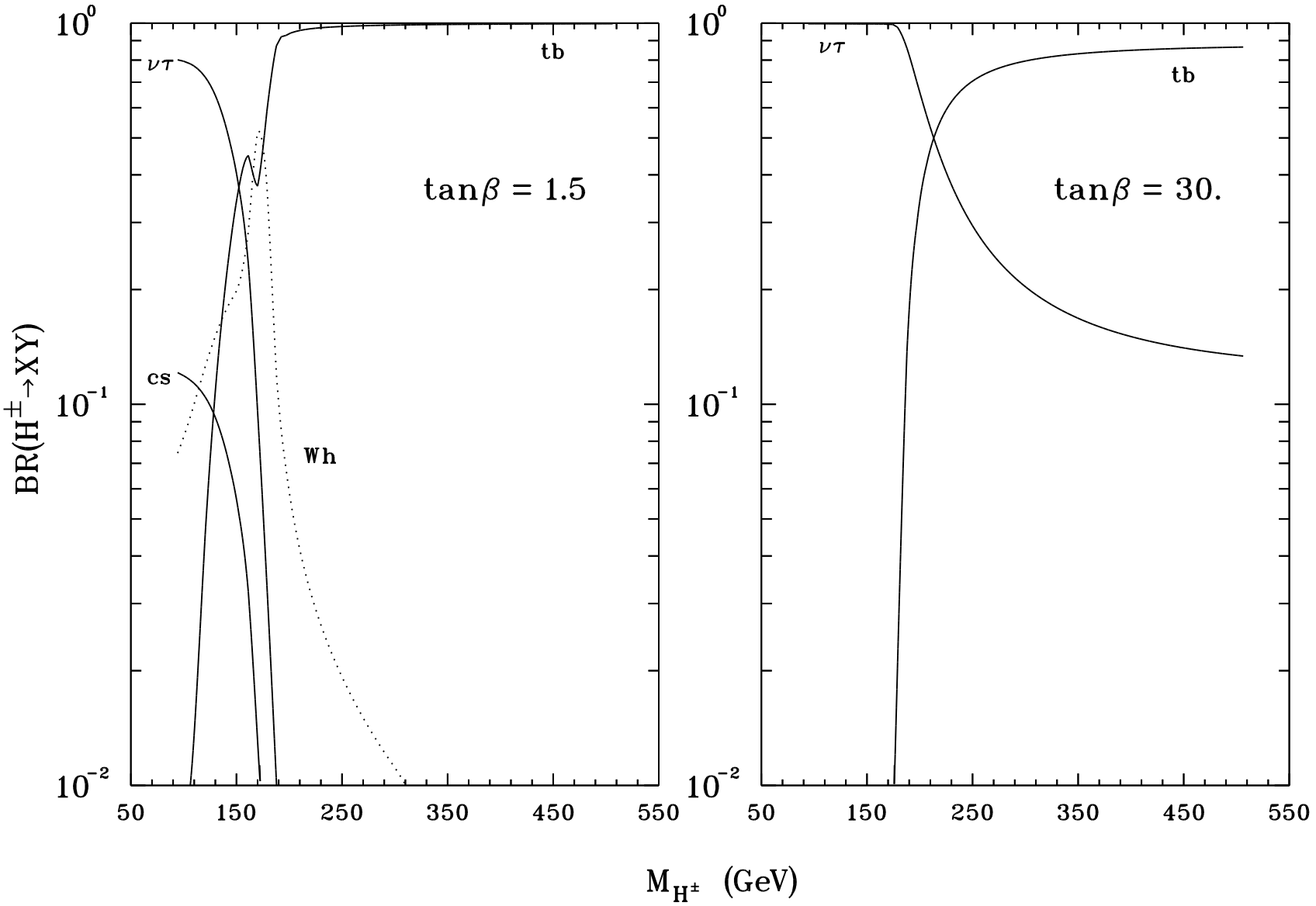
10^0
10^{-1}
10^{-2}
$BR(H^{\pm} \to XY)$
$\nu\tau$
tb
cs
Wh
$\tan\beta$ = 1.5
$\tan\beta$ = 30.
50
150
250
350
450
550
$M_{H^{\pm}}$ (GeV)

Fig. 5